

Powerline Wireless N Extender Kit



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1. Important Information

1.1 Important Safety Notes

the Device is intended for connection to the AC power line. For installation instructions, refer to the Installation section. The following precautions should be taken when using this product..

- Please read all instructions before installing and operating this product.
- Please keep all instructions for later reference.
- Please follow all warnings and instructions marked on the product.
- **For safety reason, when device is being powered on, this product should NOT be installed in any electric socket which makes the surface with venting holes on the product to face downward (facing the floor).**
- **Unplug the Powerline device from the wall outlet before cleaning. Use a dry cloth for cleaning. DO NOT use liquid cleaners or aerosol cleaners.**
- **DO NOT** operate this product near water.
- This product should **never** be placed near or over a radiator, or heat register.
- This product relies on the building's electrical installation for short-circuit (over current) protection.
- **DO NOT** allow anything to rest on the product interconnect plug. **DO NOT** locate this product where people may walk on the cords.
- Because this product sends data over the power line, it is recommended that you plug directly into a power outlet. Do not plug the Device into a UPS or power strip with surge protection. The product has its own power filter for protection against surges.
- **Only** a qualified technician should service this product. Opening or removing covers may result in exposure to dangerous voltage points or other risks.
- Unplug the product from the wall outlet and refer the product to qualified service personnel for the following conditions:
 - When the interconnect cords are damaged or frayed.
 - If liquid has been spilled into the product.
 - If the product has been exposed to rain or water.
 - If the product does not operate normally when the operating instructions are followed.
 - If the product exhibits a distinct change in performance.

CONSIGNES DE SECURITE

Avant d'utiliser l'appareil pour la première fois, veuillez lire attentivement ces

instructions se rapportant a la securite et les conserver pour reference
ulterieure.

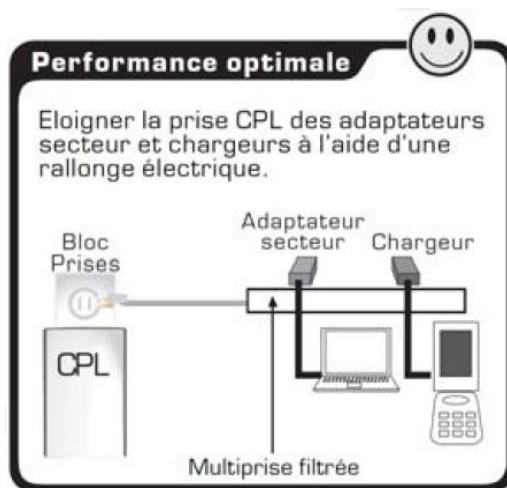
Aucune piece de cet appareil ne peut etre reparee ou remplacee par l'utilisateur.
Confiez les reparations et l'entretien exclusivement a un personnel qualifie. Tout
demontage de l'appareil entrainera l'annulation de la garantie.



Attention : pour prevenir tout risque d'electrocution,
ne retirez pas le couvercle (ou le dos) de l'appareil.

- Verifiez que la tension d'alimentation indiquee sur la plaque signalétique de la prise correspond bien a celle de votre installation electrique.
- N'utilisez pas l'appareil :
 1. si la prise est endommagee de quelque facon que ce soit,
 2. en cas de mauvais fonctionnement,
 3. si un liquide a ete deverse sur le produit ou des objets ont penetre dans l'appareil,
 4. si la prise a ete exposee a la pluie ou mis en contact avec de l'eau
 5. si le boitier du produit est endommagé,
 6. ou si le produit ne fonctionne pas alors que toutes les instructions d'utilisation ont ete suivies a la lettre.
- Branchez l'adaptateur CPL sur une prise secteur facilement accessible.
- L'adaptateur CPL est uniquement destine a une utilisation domestique en interieur.
- N'installez pas l'adaptateur a proximite d'une quelconque source de chaleur, telle qu'un radiateur, une arrivee d'air chaud, un four ou tout autre appareil (notamment les amplificateurs)
produisant de la chaleur.
- Veuillez ne pas exposer l'adaptateur a la lumiere directe du soleil et a la poussiere.
- Utilisez l'adaptateur dans un endroit sec.
- N'utilisez pas l'adaptateur a proximite d'eau ou d'une source d'humidite, telle qu'une baignoire, un lavabo, un evier de cuisine, une piscine, dans un sous-sol humide ou tout autre emplacement humide.
- Ne placez pas de sources de flamme nues (une bougie allumee, par exemple) a proximite de l'appareil.
- Les fentes et ouvertures presentes sur de l'adaptateur CPL servent a l'aeration et ne doivent
etre ni obstruees ni recouvertes.
- N'utilisez jamais d'objets dans les ouvertures de l'adaptateur CPL ou pour acceder a l'interieur de celles-ci.
- Debranchez l'adaptateur pendant les orages ou au cours des longues periodes de non-utilisation afin d'eviter de l'endommager.
- Debranchez l'adaptateur pour couper l'alimentation de l'appareil.

- Gardez l'adaptateur CPL hors de portée des enfants. Il convient de surveiller les enfants pour s'assurer qu'ils ne jouent pas avec l'adaptateur.
- Si vos prises fonctionnent de manière inhabituelle, et particulièrement s'ils émettent des sons ou des odeurs qui vous paraissent anormaux, débranchez-les immédiatement et faites les examiner par un réparateur qualifié.
- Débranchez l'adaptateur CPL avant tout nettoyage. Nettoyez-le uniquement à l'aide d'un chiffon doux et sec et évitez l'usage d'aérosols.
- Utilisez cet adaptateur uniquement dans des climats modérés. Évitez les climats tropicaux et particulièrement humides.



1.2 Federal Communications Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Labeling Requirements

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Canada, Industry Canada (IC) Notices

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the Device.

Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

Canada, avis d'Industry Canada (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (les antennes se situent à moins de 20 cm du corps d'une personne).




2.INTRODUCTION

the Device is a wireless AP device with Powerline Communication (PLC) technology integrated. The Powerline Wireless N Extender turns your home's existing wall outlet into instant "WLAN-ready" access point. It takes advantages of your home's existing wiring to deliver high speed network and wireless high-speed Internet access at the same time.

This product is suitable for general users to operate in their homes/houses, while advanced configurations through web-browser described in later chapters are suitable for seasoned users to change and manage the **Powerline Wireless N Extender** product settings.

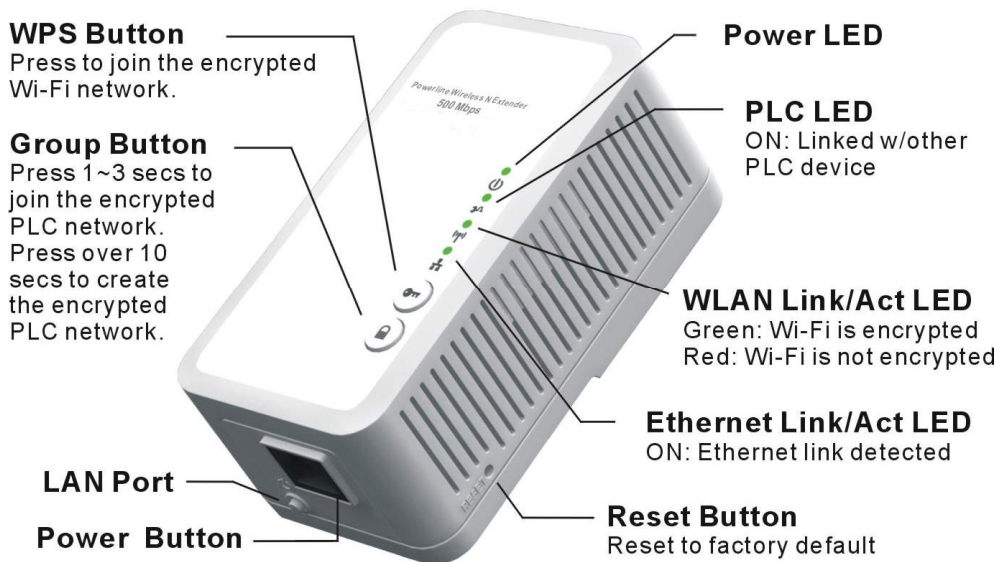
2.1 Package Content

Before starting the installation of the Device, please make sure the package contains the following items:

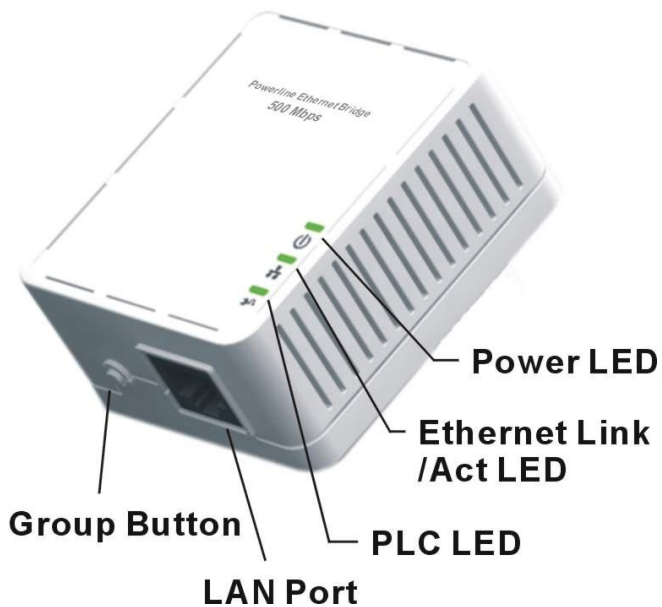
	Single pack	Combo pack
Device	 Powerline Wireless N Extender	 Powerline Ethernet Bridge  Powerline Wireless N Extender
Accessories	➤ RJ-45 Cable x 1	➤ RJ-45 Cable x 2

2.2 Product Overview







500 Mbps Powerline Wireless N Extender



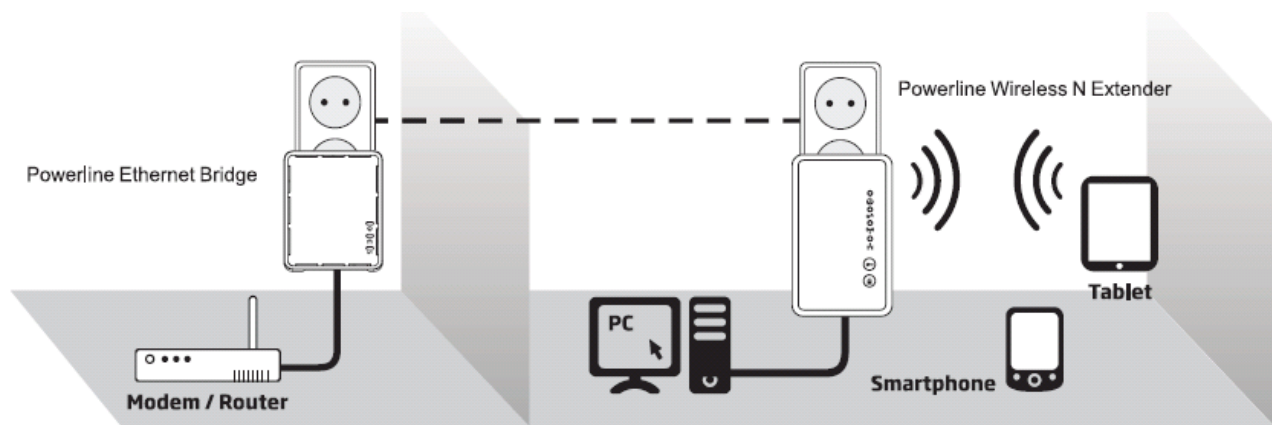
500 Mbps Powerline Bridge



2.2.1 Buttons and LEDs

LED	
	<p><u>ON</u>: Power on and ready.</p> <p><u>Blinking</u>: PLC group pairing.</p> <p><u>OFF</u>: Power off.</p>
	<p><u>ON</u>: PLC connection detected.</p> <p><u>Blinking</u>:</p> <ol style="list-style-type: none"> Fast: Powerline data rate > 60Mbps Normal: 60Mbps > Powerline data rate > 10Mbps Slow: 10Mbps > Powerline data rate <p><u>OFF</u>: No PLC connection detected. (They are too far to communicate or it is alone in its logical network).</p>
	<p><u>Steady Green</u>: Wi-Fi network with security protection.</p> <p><u>Flash Green</u>: Wi-Fi network traffic in transaction with security protection.</p> <p><u>Steady Red</u>: Wi-Fi network without security protection.</p> <p><u>Flash Red</u>: Wi-Fi network traffic in transaction without security protection.</p> <p><u>Blinking Green</u> (0.5 sec ON / 0.5 sec OFF): WPS negotiation.</p> <p><u>OFF</u> : Wi-Fi disabled.</p>
	<p><u>ON</u>: Ethernet connection detected.</p> <p><u>Blinking</u>: Network traffic in transaction.</p> <p><u>OFF</u>: No Ethernet connection detected.</p>
Buttons	
	WPS negotiation.
	<p><u>Press 10 seconds</u>: Randomly generate a new PLC network group name.</p> <p><u>Press 2 to 3 seconds</u>: Start pairing with the other PLC device. Pairing procedure keeps for 2 minutes or ends automatically when they are paired. It can be stopped manually by pressing the button for 2 to 3 seconds again.</p>
Power Button	Push to power on/off the Device.
Reset Button	<p><u>Press 1 second</u>: Reset to factory default setting.</p> <p>Press the button when the Device is powered (not in standby mode)</p>

3. HARDWARE INSTALLATION



Step 1

Plug the PLC adapter to a AC outlet and connect to router or broadband modem with an Ethernet cable (provided)

Step 2

Plug the PLC Wi-Fi Extender to a AC outlet and place it in a location you wish to extend Wi-Fi access

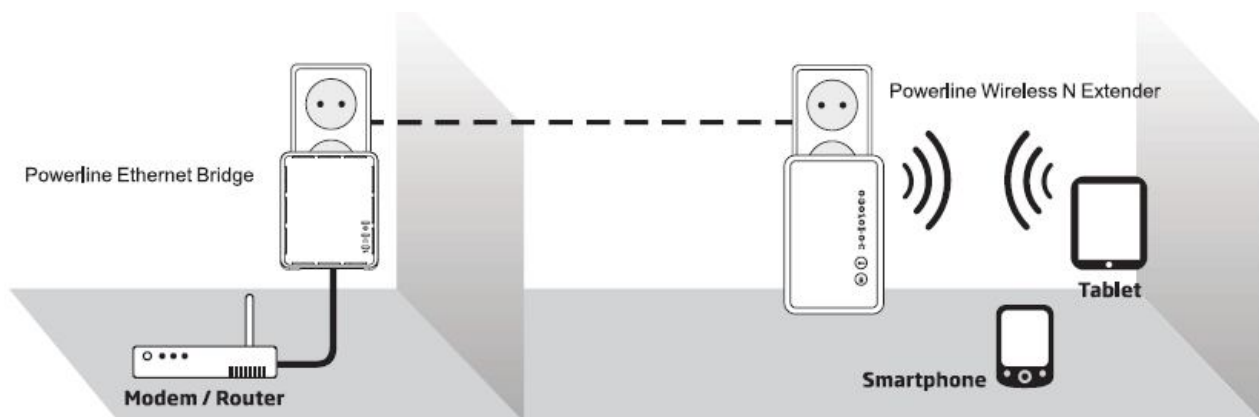
Step 3

Search Wi-Fi network and connect it with (WPA-PSK) default password*

*The default Wi-Fi password appears on the product label.

3.1 Application 1 –Extend Wireless Access Point Coverage

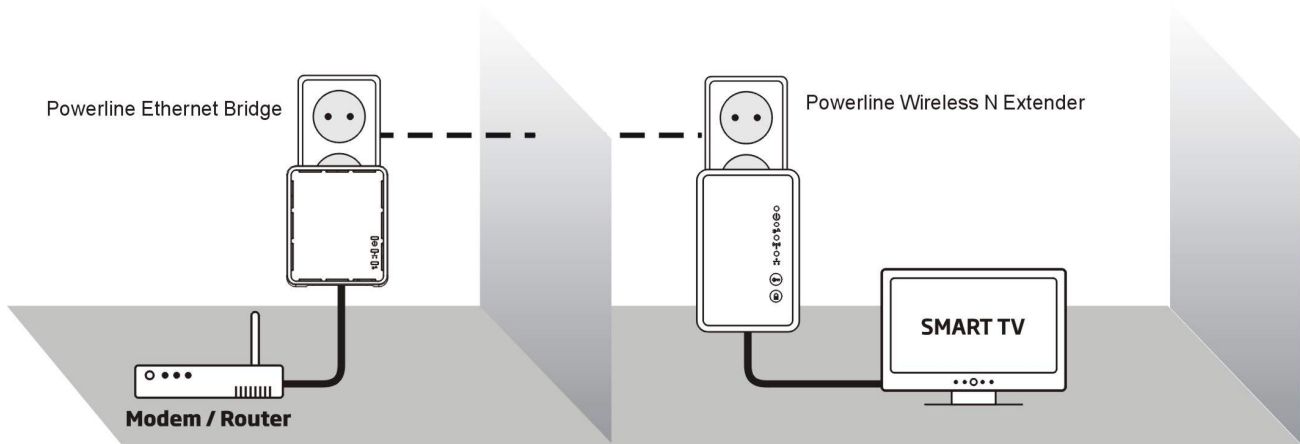
To extend wireless AP coverage in different room or floor, user can place the **Powerline Wireless N extender** near the mobile devices such as iPad, Tablet, Smartphone and Notebook. Then connect the **Powerline Wireless N extender** to powerline network for delivering Internet signal.



3.2 Application 2 – High Speed Network For HD Video Streaming

Wireless N Extender can serve as **Powerline Ethernet Bridge** to provide wired connection for Ethernet compatible devices such as cable box or SmartTV. With advanced Powerline technology, it can offer reliable and stable Internet network for HD video streaming. Lag-Free.

3.3 Quick Wi-Fi Encrypted Connection- WPS Button



The default wireless encryption is set as “**WPA-PSK**” mode with Wi-Fi SSID and password that appear on printing label at back of the Device.

For Quick Wi-Fi encrypted connection, user can simply press “WPS” button on the Device to establish encrypted wireless network between your network compatible device and powerline wireless N extender.

4. Encrypted PLC Network

4.1 Create an Encrypted PLC Network Group

The Powerline bridges are compliant HomePlug AV specification. Every 'HomePlug AV' compliant PLC device that has the same default network name, "**HomePlug AV**", is capable of communicating with other "HomePlug AV" devices. This is so called the "**Public Network**". Two or more powerline devices under the same network can communicate with one another.

If you have a pair of powerline device, either one in the pair can be "device A" or "device B". By pressing the GROUP button more than 10 seconds; it will generate a random network group (different from HomePlug AV). Users can take the following two steps to change the public network group to the private network group to protect their data while transmitting over the powerline. Users also can create more than one private network groups by pressing GROUP button directly without software installation required.

*NOTE: Put the Devices side by side will be more convenient during the setting procedure. After network group is set, the Devices can be deployed anywhere at home.

Step I: Clear Group Attribute

Clear the original network group of device B by pressing its GROUP button more than 10 seconds until all LED lights simultaneously turns off and on once. At this moment, its network group name has been changed to a random name. It means that this device is **(1) ready to be assigned another network name or (2) to be used as a seed device so other PLC devices can join to a private network group.**

Step II: Join to Other Network Group

1. Press GROUP button of device A for 2 to 3 seconds (make sure POWER LED starts blinking).
2. Press GROUP button of device B for 2 to 3 seconds (make sure POWER LED starts blinking).

The Device B which has cleared its group attribute will join to the Device A which has not. This step makes device A and B are under the same encrypted network. Additional device C can be added into device A's logical network by taking same steps, thus all of the Device A, B, and C in the same encrypted network group. User can assign as many powerline devices into the logical network group as described in the SPECIFICATION section.

*NOTE: It does not matter which device's button is pressed first, but please press the second device's

GROUP button **within two minutes** after pressing first device's GROUP button. After 10 seconds, device will start communicating with device A.

4.2 Remove Device from an Existing Network Group

If you would like to remove powerline device from an existing network group, you can generate a new group name (referring to Step I) to stop communication with an existing network group.

4.3 Create Additional Encrypted Network

If you want to create additional private network for your powerline devices that co-existence with your existing powerline private network group, please repeat the **Step 1 & 2** to generate new private network group for selected powerline devices.

P.S. Users can press the RESET button to reset the network name back to its factory default.

5. ADVANCED WI-FI SETTINGS VIA WEB BROWER

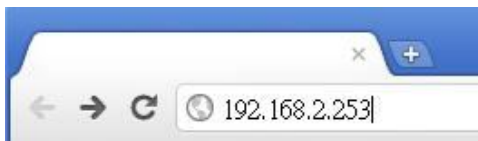
5.1 Getting Started

The configuration of this device is through web-browser. The default IP address of the Device is **192.168.2.253**, and the subnet-mask is **255.255.255.0**. The DHCP server inside the Device is default to "Off" (Disable).

1. Plug Powerline Wireless N Extender into wall socket
2. Set up your computer IP to the same IP domain manually (**Control panel > Network connections > double click "Local area connection" > Properties > select "Internet Protocol TCP/IP" and click Properties > select "Use the following IP address") ie. 192.168.2.xxx (you can set xxx from 1 – 128)**

Then connect your computer to the Device.(wireless or wired)

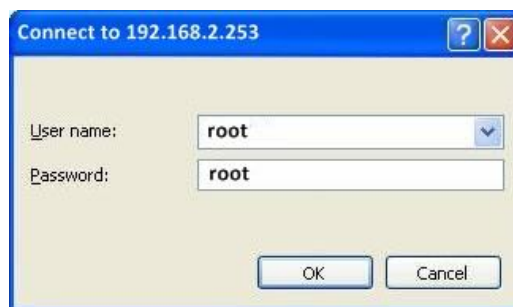
3. Running Web browser and type the IP address of this device (**192.168.2.253**) on the place you enter URL address, then you may link to the Device for further settings.



4. Login the Device

User name: **root**

Password: **root**



Note: Remember changing back to " Obtain an IP address automatically " after all setting are done.

5. At first login, please select the language you would like to use. (**English, Traditional Chinese, Simple Chinese**)

Note: Please ensure there is not multiple DHCP servers in your network environment, otherwise it will cause abnormal situation.

5.2 Home

5.2.1 Select Language

The Device provides 3 languages, English, Tradition Chinese and Simple Chinese for you to select one you want to use.

Powerline Wireless N Extender

The screenshot shows the 'HOME' tab selected in the top navigation bar. On the left sidebar, 'SELECT LANGUAGE' is highlighted. The main content area has a 'Select Language' dropdown menu with 'English' selected. Below the dropdown, the options 'English', 'Traditional Chinese', and 'Simple Chinese' are listed. An 'Apply' button is to the right of the dropdown.

5.2.2 Setup Wizard

The setup Wizard can help you to setup the Device with minimum setting. Open the page from the left panel and click “Next” button.

Powerline Wireless N Extender

The screenshot shows the 'HOME' tab selected in the top navigation bar. On the left sidebar, 'SETUP WIZARD' is highlighted. The main content area is titled 'Setup Wizard' and contains the text: 'The setup wizard will guide you to configure the device.' and 'Welcome to Setup Wizard.' Below this, it says 'The Wizard will guide you the through following steps by clicking on Next.' followed by a numbered list: 1. Setup Administrator Account, 2. Setup LAN Interface, 3. Setup Wireless Settings, 4. Setup Wireless Encryption. At the bottom, there are three buttons: 'Previous', 'Next' (highlighted), and 'Finish'.

Step 1 : Set up account and password for login the Device configuration in the future.

Step 2 : Set up LAN interface.

Step 3 : The page is for basic wireless setting, to set network mode and SSID...etc

Step 4 : Set wireless security and encryption to prevent from unauthorized access.

Step 5 : Click “Finish” button and the Device will reboot to apply the settings.



5.2.3 Operation Mode Configuration

This device supports five operation modes for the IP network. Click to select one between the following wireless operation modes, then click Apply button.

AP Mode

This device act as Wireless Access Point (**AP**) for wireless clients and provides a connection to Ethernet and PLC.

Powerline Wireless N Extender

The screenshot shows the web interface of the Powerline Wireless N Extender. The top navigation bar is green with tabs: HOME, INTERNET SETTINGS, WIRELESS SETTINGS, ADMINISTRATION, and REBOOT. The left sidebar is green with links: SELECT LANGUAGE, SETUP WIZARD, and OPERATION MODE. The main content area is titled "Operation Mode Configuration" and contains the text "You may configure the operation mode suitable for you environment." Below this, there is a section titled "Operation Mode" with a "Startup Mode" dropdown menu set to "AP". At the bottom, there are "Apply" and "Cancel" buttons.

Client Mode

This mode enables the establishment of connection with the other AP using infrastructure /Ad-hoc networking types. With bridge operation mode, you can directly connect one of the wired Ethernet port to your PC and the Device become a wireless adapter

Powerline Wireless N Extender

The screenshot shows the web interface of the Powerline Wireless N Extender in Client Mode. The top navigation bar is green with tabs: HOME, INTERNET SETTINGS, WIRELESS SETTINGS, ADMINISTRATION, and REBOOT. The left sidebar is green with links: SELECT LANGUAGE, SETUP WIZARD, and OPERATION MODE. The main content area is titled "Operation Mode Configuration" and contains the text "You may configure the operation mode suitable for you environment." Below this, there is a section titled "Operation Mode" with a "Startup Mode" dropdown menu set to "Client". Below that is a section titled "Wi-Fi Protected Setup" with a "WPS switch" dropdown menu set to "Disable". At the bottom, there is a section titled "Parameters" with fields for "SSID", "AP MAC Address", and "Security Mode" (set to "Disable"). At the bottom, there are "Apply" and "Cancel" buttons.

WDS (Root AP)

The wireless radio of device serves for the other AP and provides a connection to a wired LAN (the other AP must use the same chipset with this device)

Powerline Wireless N Extender

The screenshot shows the web interface of a Powerline Wireless N Extender. The top navigation bar includes 'HOME', 'INTERNET SETTINGS', 'WIRELESS SETTINGS', 'ADMINISTRATION', and 'REBOOT'. The left sidebar has 'SELECT LANGUAGE', 'SETUP WIZARD', and 'OPERATION MODE'. The main content area is titled 'Operation Mode Configuration' and contains the text: 'You may configure the operation mode suitable for you environment.' Below this, there is a section for 'Operation Mode' with a 'Startup Mode' dropdown menu set to 'WDS (rootap)'. At the bottom are 'Apply' and 'Cancel' buttons.

WDS + AP Mode

This mode combines WDS plus AP modes, and it not only allows WDS connections but also the wireless clients can survey and associate to the Device

Powerline Wireless N Extender

The screenshot shows the web interface of a Powerline Wireless N Extender. The top navigation bar includes 'HOME', 'INTERNET SETTINGS', 'WIRELESS SETTINGS', 'ADMINISTRATION', and 'REBOOT'. The left sidebar has 'SELECT LANGUAGE', 'SETUP WIZARD', and 'OPERATION MODE'. The main content area is titled 'Operation Mode Configuration' and contains the text: 'You may configure the operation mode suitable for you environment.' Below this, there is a section for 'Operation Mode' with a 'Startup Mode' dropdown menu set to 'WDS+AP'. Underneath is a 'Parameters' section with three rows: 'Secondary SSID' with an empty text box, 'AP MAC Address' with an empty text box, and 'Security Mode' with a dropdown menu set to 'Disable'. At the bottom are 'Apply' and 'Cancel' buttons.

WDS Mode

The WDS system is used to create a network of AP's that can be used as a single "virtual" AP. The Device forwards the packets to another AP with WDS function. When this mode is selected, all the wireless clients can't survey and connect to the Device. The Device only allows the WDS connection.

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
SELECT LANGUAGE	Operation Mode Configuration				
SETUP WIZARD	You may configure the operation mode suitable for you environment.				
OPERATION MODE					
	Operation Mode				
	Startup Mode <input type="text" value="WDS"/>				
	Wi-Fi Protected Setup				
	WPS switch <input type="text" value="Disable"/>				
	Parameters				
	SSID <input type="text"/>				
	AP MAC Address <input type="text"/>				
	Security Mode <input type="text" value="Disable"/>				
	<input type="button" value="Apply"/> <input type="button" value="Cancel"/>				

5.3 Internet Settings

5.3.1 LAN (Local Area Network Settings)

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
LAN	Local Area Network (LAN) Settings				
DHCP CLIENTS	You could enable/disable networking functions and configure parameters.				
	LAN Setup				
	IP Address <input type="text" value="192.168.2.253"/>				
	Subnet Mask <input type="text" value="255.255.255.0"/>				
	Default Gateway <input type="text"/>				
	Primary DNS Server <input type="text"/>				
	Secondary DNS Server <input type="text"/>				
	MAC Address <input type="text" value="00:05:9e:08:a6:4e"/>				
	DHCP Server <input type="text" value="Disable"/>				
	LLTD <input type="text" value="Disable"/>				
	QoS (Priority: 3>2>1>0)				
	IGMP command packet(join, leave,...) <input type="text" value="Priority 3"/>				
	IGMP Stream <input type="text" value="Priority 2"/>				
	Unicast <input type="text" value="Priority 1"/>				
	Multicast/Broadcast <input type="text" value="Priority 1"/>				
	IGMP Reports To Non-Querier Host <input type="text" value="Disable"/>				
	IGMP Snooping <input type="text" value="Enable"/>				
	<input type="button" value="Apply"/> <input type="button" value="Cancel"/>				

LAN setup	
Item	Description
IP Address	The Internet Protocol (IP) address.
Subnet mask	The number used to identify the IP subnet network.
Default Gateway	This is the default gateway for the LAN PCs.
Primary DNS Server	This is the primary DNS server for the LAN PCs which automatically get DNS IP address from this device.
Secondary DNS Server	This is the second DNS server for the LAN PCs which automatically get DNS IP address from this device.
DHCP Server	When enabling the DHCP server, there should be NO other DHCP server in this IP sub-domain, and you must setup the information below.
Start IP Address	This is the first IP Address of the IP pool from which the server assigns the IP Address to DHCP client PCs.
End IP Address	This is the last IP Address of the IP pool from which the server assigns the IP Address to DHCP client PCs.
Subnet mask	This is the subnet mask of this domain. The default value is "255.255.255.0".
Primary DNS Server	This is the primary DNS server for the LAN PCs which automatically get DNS IP address from this device.
Secondary DNS Server	This is the second DNS server for the LAN PCs which automatically get DNS IP address from this device.
Default Gateway	This is the default gateway for the LAN PCs.
Lease Time	This is the DHCP lease time. When it is short, the IP release/renew of the LAN will be faster but the network congestion will be more.
Statically Assigned	You can manually assign the IP Address to the certain PCs. Enter the MAC Address and IP Address in the table.
LLTD	Enable this function to support LLTD (Link Layer Topology Discovery) for Windows Vista. It shows the status of connection in the Windows Vista.
QoS	
Item	Description
IGMP command packet (join, leave..)	recommend to set the highest priority (3) to keep it work smoothly
IGMP Stream	recommend to set the higher priority (2) to make sure the good streaming video and audio quality
Unicast	recommend to set priority 1
Multicast/Broadcast	recommend to set priority 1
IGMP Reports To Non-Querier Host	default disable but recommend to turn on this function while using the Device in China
IGMP Snooping	default and also recommend to enable IGMP snooping

5.3.2 DHCP Clients

When DHCP server is enabled, you can monitor DHCP clients here.

Powerline Wireless N Extender

HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
LAN	DHCP Client List			
DHCP CLIENTS	It shows the DHCP clients connecting to the device.			
DHCP Clients				
MAC Address		IP Address	Expires in	

5.4 Wireless Settings

5.4.1 Basic (Basic Wireless Settings)

Powerline Wireless N Extender

HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
BASIC	Basic Wireless Settings			
ADVANCED	You could configure the basic wireless settings such as Network Name (SSID) and Channel.			
SECURITY				
WPS				
STATION LIST	Wireless Network			
SITE SURVEY	Radio On/Off	<input checked="" type="radio"/> Enable <input type="radio"/> Disable		
MAC FILTER	Network Mode	11g/n HT40 PLUS		
	Network Name(SSID)	PWQ-5101		
	Hidden SSID	<input type="radio"/> Hidden <input checked="" type="radio"/> broadcast		
	MAC 1	00:a1:23:00:00:94		
	Frequency (Channel)	2437MHz (Channel 6)		
	HT Physical Mode			
	Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field		
	Short Guard Interval	<input type="radio"/> Long <input checked="" type="radio"/> Short		
	MCS	Auto		
	Aggregation MSDU(A-MSDU)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable		
	Auto Block ACK	<input type="radio"/> Disable <input checked="" type="radio"/> Enable		
	Apply		Cancel	

Wireless Network	
Item	Description
Radio On/Off	Click to enable/disable wireless function.
Network Mode	The available options are 11b, 11g, 11g/n HT20, 11g/n HT40 PLUS (default), 11 g/n HT40 MINUS

Network Name (SSID)	The SSID, which is also called ESSID is a unique identifier that wireless networking devices use in order to establish and maintain wireless connectivity. SSID can contain up to 32 alphanumeric characters.
Hidden SSID	Click to enable/disable, With hidden SSID, the AP can't be scanned and the wireless client must input SSID manually to associate this AP.
BSSID	The BSSID is displayed in this field.
Frequency (Channel)	Click the drop down box to select the radio channel. Select the unused channel to prevent the radio overlapping.

HT Physical Mode	
Item	Description
Operating Mode	<p>Default: Mixed (Mixed, Green Field).</p> <p>Mixed mode: In this mode the Device transmits the packets with preamble compatible legacy (802.11g), so they can be decoded by legacy devices. The Device receives and decodes both Mixed Mode packets and legacy packets.</p> <p>Green Field mode: the Device transmits HT packets without legacy compatible part. But the Device receives and decodes both Green Field and legacy packets.</p>
Short Guard Interval	The 11n device inserts the Guard Interval into the signal. You can choose the interval between "Long" and "Short". This option affects the Phy data rate of radio. Please refer to the table below.
MCS	It is Modulation Coding Scheme. The available options are "Auto, 0, 1-7". It changes the modulation of this device and effect the maximum Phy data rate. We recommend "Auto" setting. For the details, please refer to the table below.
Aggregation MSDU (A-MSDU)	The multiple HT packets can be transmitted with single ACK reply packet. Enable it to apply this function and reduce the network congestion.
Auto Block ACK	It is another aggregation technique which prevents sending ACK in the communication to increase the throughput. If this option is enabled, the Device will activate this function when transmitting massive data.

5.4.2 Advanced (Advance Wireless Settings)

Powerline Wireless N Extender

HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
BASIC	Advanced Wireless Settings			
ADVANCED	The detailed settings of Wireless include Wi-Fi multimedia.			
SECURITY				
WPS				
STATION LIST				
SITE SURVEY				
MAC FILTER				
Advanced Wireless				
BG Protection Mode <input type="button" value="Off"/>				
Beacon Interval <input type="text" value="100"/> ms (range 20 - 999, default 100)				
Data Beacon Rate (DTIM) <input type="text" value="1"/> ms (range 1 - 255, default 1)				
Short Preamble <input type="radio"/> Enable <input checked="" type="radio"/> Disable				
Tx Burst <input type="radio"/> Enable <input checked="" type="radio"/> Disable				
Wi-Fi Multimedia				
WMM Capable <input checked="" type="radio"/> Enable <input type="radio"/> Disable				
APSD Capable <input type="radio"/> Enable <input checked="" type="radio"/> Disable				
WMM Parameters <input type="button" value="WMM Configuration"/>				
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>				

Advanced Wireless

Item	Description
BG Protection Mode	You can select the other options including On and Off. The B/G protection technology is CTS-To-Self. It will try to reserve the throughput for 11g clients from 11b clients connecting to the Device as AP mode.
Beacon Interval	Beacons are the packets sending by Access point to synchronize the wireless network. The beacon interval is the time interval between beacons sending by this unit in AP or AP+WDS mode. The default and recommended beacon interval is 100 milliseconds.
Data Beacon Rate (DTIM)	This is the Delivery Traffic Indication Map. It is used to alert the clients that multicast and broadcast packets buffered at the AP will be transmitted immediately after the transmission of this beacon frame. You can change the value from 1 to 255. The AP will check the buffered data according to this value. For example, selecting "1" means to check the buffered data at every beacon.
Short Preamble	Default: Disable. It is a performance parameter for 802.11 b/g mode and not supported by some of very early stage of 802.11b station cards. If there is no such kind of stations associated to this AP, you can enable this function.
Tx Burst	The Device will try to send a serial of packages with single ACK reply from the clients. Enable this function to apply it.

Wi-Fi Multimedia

Item	Description
WMM Capable	Choose "Enable" to enable WMM function.
APSD Capable	Turn on this feature so this device can detect whether the connecting wireless client device has turned on power saving feature. If yes, this device will send packets with power saving tag accordingly.
WMM Parameter	Click the button to edit the WMM parameter.

5.4.3 Security (Wireless Security/Encryption Settings)

Powerline Wireless N Extender

The default SSID and Wi-Fi key

Wireless Security/Encryption Settings	
Item	Description
Security Mode	Disable, OPEN, SHARED, WEP AUTO, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA/WPA2 PSK, WPA/WPA2, 802.1X.

Security Mode: Choose one as the wireless authentication among the following types: Open, Shared, WEP Auto, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA/WPA2-PSK, WPA/WPA2, and 802.1 X.

- Encryption Type: Select one for the encryption type. The options vary depending on the Authentication mode. The corresponding options shows below.

Authentication	Encryption type	Key option
Open/Shared/WEP Auto	WEP	Default Key ID, Key content of Key 1/2/3/4
WPA/WPA2-PSK (Pre-Shared Key)	TKIP, AES, TKIP/AES	Pass Phrase (8-32 bytes), Key Renewal Interval
WPA/WPA2 Enterprise	TKIP, AES,	Radius Server

	TKIP/AES	Network/Address/Port/Key/Session timeout
--	----------	---

WEP Encryption Setting

Wired Equivalent Privacy (WEP) is implemented in this device to prevent unauthorized access to your wireless network. The WEP setting must be as same as each client in your wireless network.

- Authentication Type: Open, Shared and Auto. When choose “Open” or “Shared”, all of the clients must select the same authentication to associate this AP. If select “WEP Auto”, the clients don’t have to use the same “Open” or “Shared” authentication. They can choose any one to authenticate.
- Default Key ID: Select the Key ID as the default Key.
- Key 1/2/3/4: Select “ASCII” or “Hex” and then type the key in the text field. It will check whether the number of characters meet 10 or 26. If not, an error message is shown.
 - 64-bit WEP Encryption : 64-bit WEP keys are as same as the encryption method of 40-bit WEP. When input 10 hexadecimal digits (0-9, a-f or A-F) or 5 ACSII chars as the key, it is using 64-bit WEP encryption.
 - 128-bit WEP Encryption : 128-bit WEP keys are as same as the encryption method of 104-bit WEP. When input 26 hexadecimal digits (0-9, a-f or A-F) or 10 ACSII chars, it is using 128-bit WEP encryption.

WPA Authentication Mode

This device supports six WPA modes including WPA-PSK (Pre-Shared Key), WPA, WPA2-PSK, WPA2 and additional WPA/WPA2 PSK and WPA/WPA2 mixed mode. For individual and residential user, it is recommended to select WPA-PSK or WPA2-PSK to encrypt the link without additional RADIUS server. This mode requires only an access point and client station that supports WPA-PSK. For WPA/WPA2, authentication is achieved via WPA RADIUS Server.

- **WPA/WPA2-PSK:**
 - Pass Phrase:

Option: Pass Phrase (8-32bytes). This mode requires only an access point and client station that supports WPA-PSK. The WPA-PSK settings include Key Format, Length and Value. They must be as same as each wireless client in your wireless network. When Key format is Passphrase, the key value should have 8-63 ACSII chars.
 - Key Renewal Interval:

The WPA Algorithm will regroup the key for a period. The default value is 3600 seconds and you can adjust the time interval.

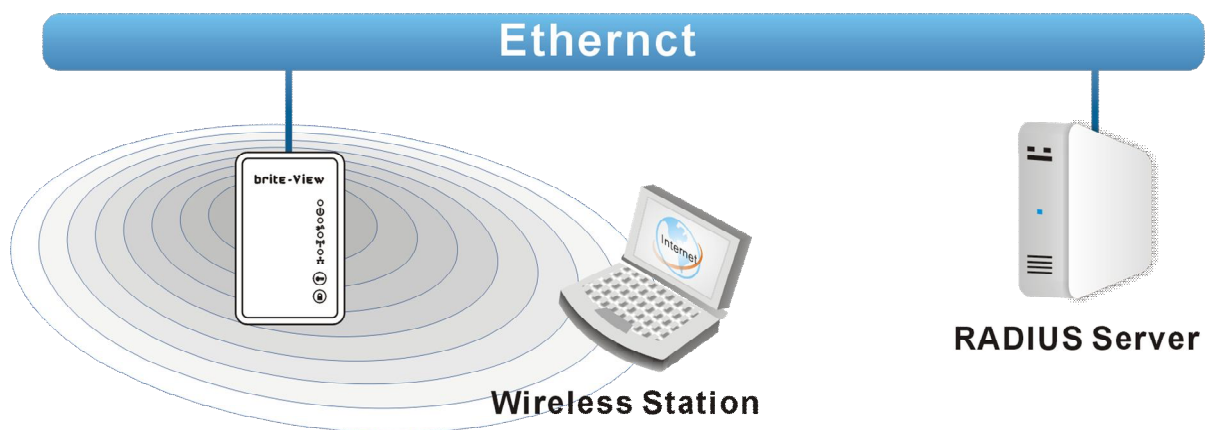
- **WPA/WPA2:**

When selecting WPA/WPA2, you have to add user accounts and the target device to the RADIUS Server. In the Device, you need to specify the Server Network, Server address, Server Port and Server Key of the target RADIUS server.

- WPA Algorithms: TKIP, AES, TKIP/AES. Select the encryption type. When selecting TKIP/AES, the client can use whether TKIP or AES for the authentication.
- Pre-Authentication Support option: This option only appears when selecting WPA2 or WPA/WPA2 as the authentication mode. Enable it to use this function.

- **Radius Server Setting:**

- IP Address: Input the IP Address of the Radius server.
- Port: Input the port of the Radius server. The default port is 1812.
- Shared Secret: Input the Authentication Key.
- Session Timeout: Input the maximum idle time for this connection.



5.4.4 WPS (Wi-Fi Protected Setup)

Powerline Wireless N Extender

The screenshot shows the web interface of a Powerline Wireless N Extender. The top navigation bar has tabs: HOME, INTERNET SETTINGS, WIRELESS SETTINGS (selected), ADMINISTRATION, and REBOOT. On the left, a sidebar menu lists: BASIC, ADVANCED, SECURITY, WPS (selected), STATION LIST, SITE SURVEY, and MAC FILTER. The main content area is titled 'Wi-Fi Protected Setup'. It contains a text block explaining that WPS can be setup easily via PBC or PIN, but only if WPA-PSK, WPA2-PSK, or WPA/WPA2-PSK is set and Hidden SSID is disabled. Below this is a 'WPS Config' section with a 'WPS:' label, radio buttons for 'Enable' (selected) and 'Disable', and an 'Apply' button.

This function helps to establish the Wi-Fi security. For AP mode, it can be setup one WPS method including PIN (Personal Identification Number) and PBC (Push Button Certification). To begin the WPS progress, the WLAN security must be setup first. Please setup one among WPAPSK, WPA2PSK, WPA/WPA2PSK and then apply WPS setting. WPS will only be available in these encryption types.

PIN: query the PIN code in the utility of the WLAN client connecting to this AP, and then enter it in the PIN field. The Wi-Fi link between the WLAN client and the Device should be encrypted.

PBC: Select PBC, and then you can begin the PBC process. Press the PBC button in the front panel can also trigger this process. Press or click the PBC button on the WLAN client to finish the communication. You can press the PBC button on the WLAN client first and then click the PBC button on this device to establish the encryption.

The options and the information fields are showed below.

WPS Config	
Item	Description
WPS Capable	Select enable then press Apply button to start this function.

NOTE : WPS will be available only with the two conditions:

- 1 、 WPA-PSK, WPA2-PSK or WPA/WPA2-PSK is set
- 2 、 Hidden SSID is disabled.

5.4.5 Station list

In the Station list, the information of associated clients is displayed.

Powerline Wireless N Extender

The screenshot shows the web interface of a Powerline Wireless N Extender. The top navigation bar includes HOME, INTERNET SETTINGS, WIRELESS SETTINGS (highlighted), ADMINISTRATION, and REBOOT. The left sidebar lists menu items: BASIC, ADVANCED, SECURITY, WPS, STATION LIST (highlighted), SITE SURVEY, and MAC FILTER. The main content area is titled 'Station List' and contains the text: 'You could monitor stations which associated with the device.' Below this is a table with the header 'Wireless Network' and columns: MAC Address, AID, CHAN, RATE, RSSI, IDLE, TX, SEQ, RX, SEQ.

5.4.6 Site Survey (AP Mode Site Survey)

Site survey shows information of APs nearby; you may choose one of these APs connecting.

Powerline Wireless N Extender

The screenshot shows the web interface of a Powerline Wireless N Extender. The top navigation bar includes HOME, INTERNET SETTINGS, WIRELESS SETTINGS (highlighted), ADMINISTRATION, and REBOOT. The left sidebar lists menu items: BASIC, ADVANCED, SECURITY, WPS, STATION LIST, SITE SURVEY (highlighted), and MAC FILTER. The main content area is titled 'AP Mode Site Survey' and contains the text: 'It shows the nearby APs. You could choose one of these to connect.' Below this is a table with the header 'Site Survey' and columns: SSID, BSSID, Channel, and Encryption. The table lists four nearby APs: VAR-PERL, Wendy_Cha, 8tec-01, and oneplus2. At the bottom of the page are four buttons: Back, Next, Rescan, and Final.

	SSID	BSSID	Channel	Encryption
<input type="radio"/>	VAR-PERL	00:13:F7:58:6D:C7	8	ON
<input type="radio"/>	Wendy_Cha	00:D0:41:C7:62:89	6	ON
<input type="radio"/>	8tec-01	80:1F:02:1F:2D:F0	6	ON
<input type="radio"/>	oneplus2	00:18:F3:63:E4:2B	6	ON

5.4.7 MAC Filter

MAC filtering allows the user to either limit specific MAC addresses from associating with the AP, or specifically indicates which MAC addresses can associate with the AP.

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
--	------	----------------------	----------------------	----------------	--------

BASIC

ADVANCED

SECURITY

WPS

STATION LIST

SITE SURVEY

MAC FILTER

MAC Filter

MAC filtering allows the user to allow or deny specific MAC addresses which associated with the device.

MAC Filter

Disable ▾

Apply

MAC address Filter Settings

Action

☐ Allow ☒ Deny

MAC Address

Add MAC

The maximum allow rule count is 8

Index	MAC Address	Comment
-------	-------------	---------

Delete ALLOW Selected

The maximum deny rule count is 8

Index	MAC Address	Comment
-------	-------------	---------

Delete DENY Selected

5.5 Administration

5.5.1 Management (System Management)

Powerline Wireless N Extender

HOMEINTERNET SETTINGSWIRELESS SETTINGSADMINISTRATIONREBOOT

MANAGEMENTSystem Management

UPLOAD FIRMWARESet your account, password and NTP.

SETTINGS MANAGEMENT

STATUS

STATISTICS

SYSTEM LOG

Administrator Settings

Accountroot

Password●●●●

ApplyCancel

NTP Settings

Current TimeMon Mar 5 10:06:07 2012Sync with host

Time Zone:(GMT+08:00) Taipei

NTP Serverex: time.nist.gov
ntp0.broad.mit.edu
time.stdtime.gov.tw

NTP synchronization(hours)

ApplyCancel

Administrator Settings	
Item	Description
Account	Enter the name for login. The default name is “root”.
Password	Enter the password for login. The default password is “root”.

NTP Settings	
Item	Description
Sync with host	Synchronizing current time with your PC
Time Zone	Select local time zone.
NTP server	Input the NTP server address. If you are not sure about the local NTP server address, you can input pool.ntp.org.
NTP Synchronization	This is the time interval of NTP synchronization. The range is 1-300 hours. It is the necessary field for NTP setting and please input it to apply.

5.5.2 Upgrade firmware

This page provides the firmware upgrade function.

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
MANAGEMENT	Upgrade Firmware				
UPLOAD FIRMWARE	Upgrade firmware for the device. The upgrade process takes about 1 minute and DO NOT POWER OFF the device during the period. Please be noticed that a corrupted image will crash the system.				
SETTINGS MANAGEMENT					
STATUS					
STATISTICS					
SYSTEM LOG					
	Update Firmware				
	Location: <input type="text"/> 浏览...				
	Apply				

Click the browse button to browse the file and click “open” button to select the file. The upgrade process takes about 1 minute and **DO NOT POWER OFF** the Device during this period. In order to continue configuration, please refresh the PC web-browser to reflect new upgraded FW settings.

5.5.3 Settings management

You might save system settings by exporting them to a configuration file, restore them by importing the file, or reset them to factory default.

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
MANAGEMENT	Settings Management				
UPLOAD FIRMWARE	You can do factory default value or export/import it.				
SETTINGS MANAGEMENT					
STATUS					
STATISTICS					
SYSTEM LOG					
	Export Settings				
	Export Button <input type="button" value="Export"/>				
	Import Settings				
	Settings file location <input type="text"/> 浏览...				
	<input type="button" value="Import"/> <input type="button" value="Cancel"/>				
	Load Factory Defaults				
	Load Default Button <input type="button" value="Load Default"/>				

5.5.4 Status

The page shows system status information.

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
MANAGEMENT	Access Point Status				
UPLOAD FIRMWARE	Display information of the device model, software version, local network, and wireless information.				
SETTINGS MANAGEMENT					
STATUS	System Info				
STATISTICS	Model Name PWQ-5101				
SYSTEM LOG	System Version PWQ51019201 (Sep 20 2012)				
	System Time Mon Mar 5 10:12:31 2012				
	Local Network				
	Local IP Address 192.168.2.253				
	Local Netmask 255.255.255.0				
	Default Gateway				
	Primary Domain Name Server				
	Secondary Domain Name Server				
	MAC Address 00:05:9e:08:a6:4e				
	Wireless Information				
	Mode AP				
	Band 11NGHT40PLUS				
	SSID PWQ-5101				
	Channel 6				
	Encryption None				
	MAC Address 00:a1:23:00:00:94				
	Associated Clients 0				
	<input type="button" value="Refresh"/>				

5.5.5 Statistics

Powerline Wireless N Extender

	HOME	INTERNET SETTINGS	WIRELESS SETTINGS	ADMINISTRATION	REBOOT
MANAGEMENT	Statistic				
UPLOAD FIRMWARE	Show the statistic data of the device.				
SETTINGS MANAGEMENT					
STATUS	Memory				
STATISTICS	Memory total: 13980 kB				
SYSTEM LOG	Memory left: 7388 kB				
	All interfaces				
	Interfaces Ethernet				
	Rx Packet: 1262				
	Rx Byte: 173718				
	Tx Packet: 1315				
	Tx Byte: 716953				
	Interfaces Wireless				
	Rx Packet: 1004				
	Rx Byte: 164837				
	Tx Packet: 4155				
	Tx Byte: 946251				

Administrator Settings	
Item	Description
Memory total	This is the total memory size for this device.
Memory left	The available memory size shows in this field.

All interfaces

The information likes “Rx Packet”, “Rx Byte”, “Tx Packet” and “Tx Byte” shows the status of all interface including “Ethernet and Wireless”.

5.5.6 System log

The system log shows in this window. For technical support, you may need to copy and save the log to text file and send it to the technical service. Click “Refresh” button to refresh the page or “Clear” button to clear the log.

Powerline Wireless N Extender

The screenshot displays the web interface of a Powerline Wireless N Extender. The top navigation bar is green with buttons for HOME, INTERNET SETTINGS, WIRELESS SETTINGS, ADMINISTRATION (highlighted), and REBOOT. On the left, a sidebar menu lists MANAGEMENT, UPLOAD FIRMWARE, SETTINGS MANAGEMENT, STATUS, STATISTICS, and SYSTEM LOG (highlighted). The main content area is titled "System Log" and contains the text "You could check the system log below." with "Refresh" and "Clear" buttons. Below this is a scrollable log window titled "System Log" showing system boot logs with timestamps and messages such as "flash_size passed from bootloader = 4", "arg 1: console=ttyS0,115200", and "NET: Registered protocol family 2".

5.6 Reboot

5.6.1 Reboot System

Powerline Wireless N Extender

The screenshot displays the web interface of a Powerline Wireless N Extender, specifically the "Reboot System" page. The top navigation bar is green with buttons for HOME, INTERNET SETTINGS, WIRELESS SETTINGS, ADMINISTRATION, and REBOOT (highlighted). On the left, a sidebar menu lists REBOOT SYSTEM (highlighted). The main content area is titled "Reboot System" and contains the text "Do system restart". Below this is a scrollable area titled "Reboot System" with a "Reboot Button" and a "Reboot" button.

5.7 Channel Number

The following table is the available frequencies (in MHz) for the 2.4 GHz radio:

Channel No.	Frequency	Region Domain
1	2412	Americas, Taiwan, EMEA, Japan, Australia and China
2	2417	Americas, Taiwan, EMEA, Japan, Australia and China
3	2422	Americas, Taiwan, EMEA, Japan, Australia and China
4	2427	Americas, Taiwan, EMEA, Japan, Australia and China
5	2432	Americas, Taiwan, EMEA, Japan, Australia and China
6	2437	Americas, Taiwan, EMEA, Japan, Australia and China
7	2442	Americas, Taiwan, EMEA, Japan, Australia and China
8	2447	Americas, Taiwan, EMEA, Japan, Australia and China
9	2452	Americas, Taiwan, EMEA, Japan, Australia and China
10	2457	Americas, Taiwan, EMEA, Japan, Australia and China
11	2462	Americas, Taiwan, EMEA, Japan, Australia and China
12	2467	EMEA, Japan, Australia and China
13	2472	EMEA, Japan, Australia and China
14	2484	Japan, only in 802.11b mode

*: EMEA (Europe, the Middle East and Africa).

The available channel is set by the factory according to the region of distribution and can't be changed by user. For example, the available channel of the American model is from ch1 to ch11.

6. ENHANCE PLC PERFORMANCE

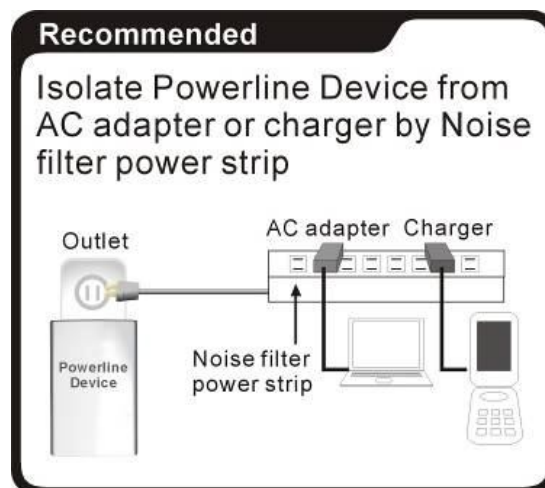
While Powerline device delivers data over the existing electrical wiring in the house, the actual performance may be affected by electrical noises or the length of the wiring. To improve PLC performance, please refer to below recommendations while placing the Powerline device.

AC outlets connection

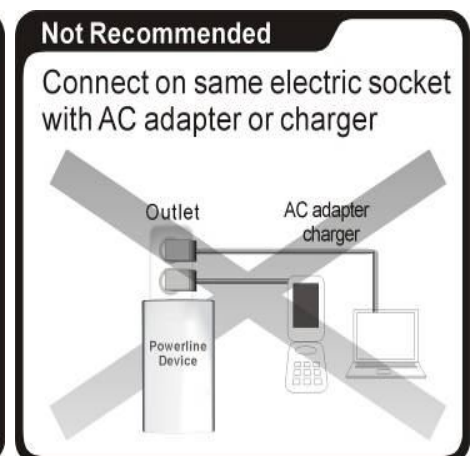
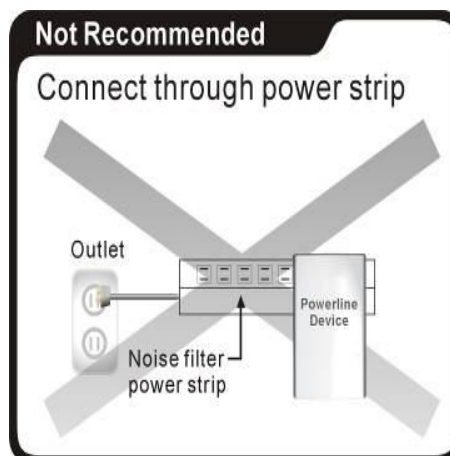
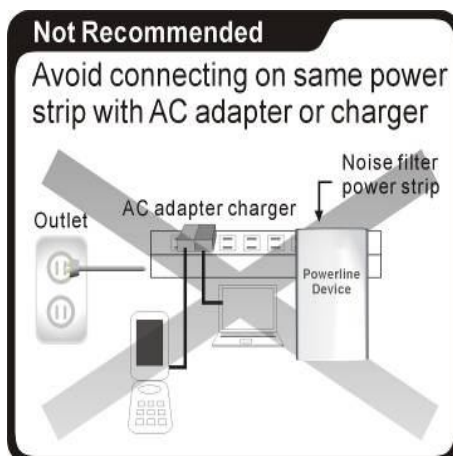
- Avoid connecting PLC device to an uninterruptible power supply (UPS) or backup power supply device. For best results, connect the adaptors directly to a wall outlet is recommended.
- Avoid connecting high-power consuming appliances to the same wall outlet.

See the following illustration:

For better performance, the following connection is recommended.



The following connections are **NOT** recommended.



Connection via Power Strip

If user intends to connect the PLC device via power strip, please follow below reference for better performance:

- Make sure the power strip does not support a noise filter or a surge protector.

Electrical Interference

Some household appliances may produce noise emission. If noise emission is spread over the electrical wiring it will affect PLC performance in the house. For the best results, we recommend to connect an electrical noise filter with the appliances such as:

- Battery chargers (including cell phone chargers)
- Hair dryers
- Power drills
- Halogen light
- Vacuum cleaner
- Lights or lamps with touch-sensitivity feature supported

Electrical Wiring

The PLC device delivers data over the existing electrical wiring in the house. Actual PLC data transfer rate might vary including the transmission distance between two PLC adapters..

7. SPECIFICATIONS

Powerline Wireless N Extender	
Standards	WLAN: IEEE 802.11 b/g, IEEE 802.11n
	LAN: IEEE 802.3, IEEE 802.3u
	Powerline: HomePlug AV 1.0
Maximum Throughput	WLAN to Ethernet: up to 93 Mbps (Under 802.11n 40MHz)
	Powerline to Ethernet: TCP: 92 Mbps
Frequency band	WLAN: 2.4~2.4835GHz
	PLC: 2~ 68MHz
WLAN transceiver spec	RF Power:
	802.11b TX: 16 dBm +/- 1.5dB (typ.)@1Mbps
	802.11g TX : 16 dBm +/- 1.5dB (typ.)@6Mbps
	802.11n TX : 14 dBm +/- 1.5dB (typ.)@6.5Mbps
	802.11n TX : 13 dBm +/- 1.5dB (typ.)@13.5Mbps
	Sensitivity:
	802.11b RX: -82 dBm(typ.)@11Mbps
	802.11g RX: -70 dBm(typ.)@54Mbps
	802.11n RX(20MHz): -67dBm(typ.)@ 72.2Mbps
	802.11n RX(40MHz): -64dBm(typ.)@ 150Mbps
	Physical Data Rate:
	802.11b: 1,2, 5.5, 11Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
	802.11n (20MHz): MCS0~7, Up to 72.2Mbps
	802.11n (40MHz): MCS0~7, Up to 150Mbps
Wi-Fi mode	Wireless AP+ Bridge mode (Default)
Security mode	WLAN WPS PBC / PIN code, WPA-PSK, and WPA2-PSK
	PLC 128-bit AES
Antenna type	1T1R
LAN port	1 port
AC input	100 - 240 V
	50-60Hz
Power consumption	5.28W @ 220V
	4.52W @ 110V

LEDs	POWER LED (Green);
	PLC Link/Activity LED (Green);
	Wireless & Security LED (dual color);
	Ethernet (Green)
Buttons	WPS
	GROUP/Pairing
	Power on/off
	RESET
PLC PHY Rate	500 Mbps
PLC Modulation	OFDM (QAM 8/16/64/256/1024/4096, BPSK, QPSK, ROBO)
PLC Distance	AC Wire : up to 300 meters
Max. dev in a PLC network Group	8/16 (Active/Total)
Temperature	Operating: 0~40 °C; Storage: -20~60 °C
Relative Humidity	Operating: 10~85% Non-Condensing , Storage: 5~90% Non-Condensing
Dimension	56 x 105 x 48(H) mm
Certification	FCC, CE, CE-LVD, RoHS, WEEE

500Mbps Powerline Ethernet Bridge	
RJ-45 port	1 port
PHY Rate	500Mbps
Max Data Rate	TCP : 95 Mbps, UDP : 95 Mbps
Frequency Band	2 to 28 MHz, 30 to 68 MHz
Access Methods	TDMA and priority-based CSMA/CA channel access schemes
Modulation	Supports OFDM 4096/1024/256/64/16/8-QAM, QPSK, BPSK and ROBO
Other FW Features	<ul style="list-style-type: none"> * Dynamic channel adaptation and channel estimation maximizes throughput in harsh channel conditions, * Advanced Turbo Code Forward Error Correction, * HomePlug® AV MAC: TDMA and priority based CSMA/CA channel access schemes, * Integrated Quality of Service (QoS) Enhancements * Supports IGMP managed multicast sessions.
Transmission Distance	AC Wire : up to 300 meters

LAN Standards	100 BASE-TX, 10 BASE-T,
PLC Standard	IEEE 1901 compliant /HomePlug AV1.1
Computer OS	OS independent
Max. dev in a network Group	8 Active/ 16 Total
IGMP	Support for IPv4/IGMP v1,v2,v3 snooping
	Support for IPv6 and MLD v1,v2 snooping
Encryption	128-bit AES Link Encryption with key management
LEDs	Power(green), PLC Link/Activity(green), Ethernet Link/Activity (green)
Temperature	<u>Operating</u> : 0~40 °C; <u>Storage</u> : -20~60 °C
Relative Humidity	<u>Operating</u> : 10~85% Non-Condensing , <u>Storage</u> : 5~90% Non-Condensing
Power Source	100 ~ 240 VAC 50/60Hz
Power consumption	<u>Full load</u> : (230 VAC) = 2.2W;
	<u>Standby mode</u> : <0.5W
Certification	CE, CE-LVD, FCC Class B, RoHS